

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: David Allen Kastrup, et al.	:	
	:	Art Unit: 3746
Serial No.: 10/673,875	:	
	:	Examiner: Kim, Tae Jun
Filed: September 29, 2003	:	
	:	
For: APPARATUS FOR ASSEMBLING	:	
GAS TURBINE ENGINE	:	
COMBUSTORS	:	

AMENDMENT

Mail Stop: Amendment
Commissioner for Patents
P.O. BOX 1450
Alexandria, VA 22313-1450

Sir:

In response to the Office Action dated March 21, 2006, please amend the above-identified patent application as follows.

IN THE CLAIMS

1. -- 7. (canceled)

8. (currently amended) A dual annual combustor for a gas turbine engine, said combustor comprising a spectacle plate comprising an inner annulus and an outer annulus, and a plurality of a pair of swirlers attached to said spectacle plate, each of said pair of swirlers comprises an inner swirler coupled to said inner annulus and an outer swirler coupled to said outer annulus, each said swirler comprising a pair of substantially parallel flats, wherein to assemble said combustor:

an assembly fixture is coupled to ~~at least one~~ pair of said swirlers, wherein ~~each~~ respective said assembly fixture includes a plurality of arms that are sized to receive said flats of each said swirler and an attachment portion that is configured to couple to said spectacle plate;

~~each respective said~~ assembly fixture is removably coupled to said spectacle plate to facilitate maintaining an alignment of each said ~~respective~~ swirler with respect to said spectacle plate; ~~and~~

~~each respective said~~ assembly fixture is then uncoupled from ~~each~~ said spectacle plate after each said swirler is attached to ~~each~~ said spectacle plate; and

each remaining swirler is then coupled to said spectacle plate.

9. (previously presented) A combustor in accordance with Claim 8 further comprising a plurality of deflector plates comprising an opening extending therethrough, wherein to assemble said combustor, said plurality of deflector plates are each attached to said spectacle plate such that wherein each said deflector plate opening is substantially concentrically aligned with each respective said swirler.

10. (original) A combustor in accordance with Claim 9 wherein each said swirler is welded to said spectacle plate prior to uncoupling each respective assembly fixture.

11. (previously presented) A combustor in accordance with Claim 9 wherein to assemble said combustor further comprises:

a first of said deflector plates is positioned against said spectacle plate;

a second of said deflector plates is positioned against said spectacle plate and circumferentially adjacent said first deflector plate; and

an alignment fixture is removably coupled between said first and second deflector plates to maintain a position of said first and second deflector plates with respect to said spectacle plate.

12. (previously presented) A combustor in accordance with Claim 11 wherein each said deflector plate is brazed to said spectacle plate, and wherein each respective alignment fixture is removed after said first and second deflector plates are secured to said spectacle plate during assembly of said combustor.

13. – 19. (canceled)

Remarks

The Office Action mailed March 21, 2006, has been carefully reviewed and the following remarks have been made in consequence thereof.

Claims 8-12 are pending in this application. Claims 8-12 stand rejected. Claims 1-7 and 13-19 have been canceled.

The rejection of Claims 8-12 under 35 U.S.C. § 102(e) as being anticipated by Freidauer et al. (U.S. Patent No. 6,502,400) and under 35 U.S.C. § 102(b) as being anticipated by the PCT equivalent (WO 2001/90652) (hereinafter both references are referred to by "Freidauer") is respectfully traversed.

Freidauer describes a combustor 10 for a gas turbine engine. The combustor includes a hollow body 12 including an outer liner 16 and an inner liner 18. A dome assembly 27 is positioned between and interconnects the outer and inner liners. The dome assembly includes an annular spectacle plate 28 and a plurality of circumferentially spaced swirler assemblies 30. Freidauer states that its combustor is equally applicable to multiple combustors but does not specifically describe a dual annular combustor. Moreover, it does not describe pairs of swirlers, wherein each pair of swirlers has a pair of substantially parallel and diametrically opposed flats.

Claim 8 recites "a dual annual combustor for a gas turbine engine, said combustor comprising a spectacle plate comprising an inner annulus and an outer annulus, and a plurality of a pair of swirlers attached to said spectacle plate, each of said pair of swirlers comprises an inner swirler coupled to said inner annulus and an outer swirler coupled to said outer annulus, each said swirler comprising a pair of substantially parallel flats, wherein to assemble said combustor...an assembly fixture is coupled to one pair of said swirlers, wherein said assembly fixture includes a plurality of arms that are sized to receive said flats of each said swirler and an attachment portion that is configured to couple to said spectacle plate; said assembly fixture is removably coupled to said spectacle plate to facilitate maintaining an alignment of each said swirler with respect to said spectacle plate; said assembly fixture is then uncoupled from said spectacle plate after each said swirler is attached to said spectacle plate; and each remaining swirler is then coupled to said spectacle plate."

Freidauer does not describe nor suggest a dual annual combustor as recited in Claim 8. Specifically, Freidauer does not describe nor suggest a dual annual combustor having pairs of swirlers, wherein each said swirler comprises a pair of substantially parallel flats so that the arms of an assembly fixture receive the flats of each swirler of the pair of swirlers while the combustor is being assembled. Accordingly, Claim 8 is submitted to be patentable over Freidauer.

Claims 9-12 depend, directly or indirectly, from independent Claim 8. When the recitations of Claims 9-12 are considered in combination with the recitations of Claim 8, Applicants submit that dependent Claims 9-12 likewise are patentable over Freidauer.

The rejection of Claims 8-12 under 35 U.S.C. § 102(b) as being anticipated by Halila (“Halila”) (U.S. Patent No. 5,353,587) is respectfully traversed.

Halila describes a dual annular combustor 34 for a gas turbine engine. The combustor includes a double row of swirlers 26 mounted in respective outer and inner domes 16 and 18. A deflector is mounted between each swirler and each dome. The outer dome includes an annular support 46 and the inner dome includes an annular support 48. Notably, Halila does not describe pairs of swirlers, wherein each pair of swirlers has a pair of substantially parallel and diametrically opposed flats.

Claim 8 recites “a dual annual combustor for a gas turbine engine, said combustor comprising a spectacle plate comprising an inner annulus and an outer annulus, and a plurality of a pair of swirlers attached to said spectacle plate, each of said pair of swirlers comprises an inner swirler coupled to said inner annulus and an outer swirler coupled to said outer annulus, each said swirler comprising a pair of substantially parallel flats, wherein to assemble said combustor...an assembly fixture is coupled to one pair of said swirlers, wherein said assembly fixture includes a plurality of arms that are sized to receive said flats of each said swirler and an attachment portion that is configured to couple to said spectacle plate; said assembly fixture is removably coupled to said spectacle plate to facilitate maintaining an alignment of each said swirler with respect to said spectacle plate; said assembly fixture is then uncoupled from said spectacle plate after each said swirler is attached to said spectacle plate; and each remaining swirler is then coupled to said spectacle plate.”

Halila does not describe nor suggest a dual annual combustor as recited in Claim 8. Specifically, Halila does not describe nor suggest a dual annual combustor having pairs of swirlers, wherein each said swirler comprises a pair of substantially parallel flats so that the arms of an assembly fixture receive the flats of each swirler of the pair of swirlers while the combustor is being assembled. Accordingly, Claim 8 is submitted to be patentable over Halila.

Claims 9-12 depend, directly or indirectly, from independent Claim 8. When the recitations of Claims 9-12 are considered in combination with the recitations of Claim 8, Applicants submit that dependent Claims 9-12 likewise are patentable over Halila.

The rejection of Claims 8-12 under 35 U.S.C. § 102(b) as being anticipated by Koshoffer et al. ("Koshoffer") (U.S. Patent No. 5,239,832) is respectfully traversed.

Koshoffer describes a combustor 10 for a gas turbine engine. The combustor includes an annular combustion chamber defined by an outer liner 16, an inner liner 18, a dome 28, an outer cowl 34, and an inner cowl 36. Notably, it does not describe pairs of swirlers, wherein each pair of swirlers has a pair of substantially parallel and diametrically opposed flats.

Claim 8 recites "a dual annual combustor for a gas turbine engine, said combustor comprising a spectacle plate comprising an inner annulus and an outer annulus, and a plurality of a pair of swirlers attached to said spectacle plate, each of said pair of swirlers comprises an inner swirler coupled to said inner annulus and an outer swirler coupled to said outer annulus, each said swirler comprising a pair of substantially parallel flats, wherein to assemble said combustor...an assembly fixture is coupled to one pair of said swirlers, wherein said assembly fixture includes a plurality of arms that are sized to receive said flats of each said swirler and an attachment portion that is configured to couple to said spectacle plate; said assembly fixture is removably coupled to said spectacle plate to facilitate maintaining an alignment of each said swirler with respect to said spectacle plate; said assembly fixture is then uncoupled from said spectacle plate after each said swirler is attached to said spectacle plate; and each remaining swirler is then coupled to said spectacle plate."

Koshoffer does not describe nor suggest a dual annual combustor as recited in Claim 8. Specifically, Koshoffer does not describe nor suggest a dual annual combustor having pairs of swirlers, wherein each said swirler comprises a pair of substantially parallel flats so

that the arms of an assembly fixture receive the flats of each swirler of the pair of swirlers while the combustor is being assembled. Accordingly, Claim 8 is submitted to be patentable over Koshoffer.

Claims 9-12 depend, directly or indirectly, from independent Claim 8. When the recitations of Claims 9-12 are considered in combination with the recitations of Claim 8, Applicants submit that dependent Claims 9-12 likewise are patentable over Koshoffer.

The rejection of Claims 8-12 under 35 U.S.C. § 102(a) or § 102(e) as being anticipated by Thompson et al. ("Thompson") (U.S. Patent No. 6,212,870) is respectfully traversed.

Thompson describes a combustor 10 for a gas turbine engine. The combustor includes a hollow body 12 including an outer liner 16 and an inner liner 18. A dome plate 36 is positioned between and interconnects the outer and inner liners and defines an outer dome 38 and an inner dome 40. A plurality of circumferentially spaced swirler assemblies 42 are positioned in outer dome 38 and a plurality of circumferentially spaced swirler assemblies 48 are positioned in inner dome 40. The dome plate together with swirler assemblies 42 and 48 make up a combustor dome assembly. Notably, Thompson does not describe pairs of swirlers, wherein each pair of swirlers has a pair of substantially parallel and diametrically opposed flats.

Claim 8 recites "a dual annual combustor for a gas turbine engine, said combustor comprising a spectacle plate comprising an inner annulus and an outer annulus, and a plurality of a pair of swirlers attached to said spectacle plate, each of said pair of swirlers comprises an inner swirler coupled to said inner annulus and an outer swirler coupled to said outer annulus, each said swirler comprising a pair of substantially parallel flats, wherein to assemble said combustor...an assembly fixture is coupled to one pair of said swirlers, wherein said assembly fixture includes a plurality of arms that are sized to receive said flats of each said swirler and an attachment portion that is configured to couple to said spectacle plate; said assembly fixture is removably coupled to said spectacle plate to facilitate maintaining an alignment of each said swirler with respect to said spectacle plate; said assembly fixture is then uncoupled from said spectacle plate after each said swirler is attached to said spectacle plate; and each remaining swirler is then coupled to said spectacle plate."

Thompson does not describe nor suggest a dual annual combustor as recited in Claim 8. Specifically, Thompson does not describe nor suggest a dual annual combustor having pairs of swirlers, wherein each said swirler comprises a pair of substantially parallel flats so that the arms of an assembly fixture receive the flats of each swirler of the pair of swirlers while the combustor is being assembled. Accordingly, Claim 8 is submitted to be patentable over Thompson.

Claims 9-12 depend, directly or indirectly, from independent Claim 8. When the recitations of Claims 9-12 are considered in combination with the recitations of Claim 8, Applicants submit that dependent Claims 9-12 likewise are patentable over Thompson.

For at least the reasons set forth above, Applicants respectfully request that the Section 102 rejection of Claims 8-12 be withdrawn.

The rejection of Claims 8-12 under 35 U.S.C. § 103(a) as being unpatentable over any of Halila (U.S. Patent No. 5,353,587), Koshoffer (U.S. Patent No. 5,239,832), and Thompson (U.S. Patent No. 6,212,870) in view of Freidauer or its PCT equivalent is respectfully traversed.

Claim 8 is recited above.

Freidauer, Halila, Thompson, and Koshoffer are all described above.

None of Halila, Koshoffer, Thompson, and Freidauer, considered alone or in combination, describe or suggest a dual annual combustor as recited in Claim 8. Specifically, no combination of Halila, Koshoffer, Thompson, and Freidauer describes or suggests a dual annual combustor having pairs of swirlers, wherein each said swirler comprises a pair of substantially parallel flats so that the arms of an assembly fixture receive the flats of each swirler of the pair of swirlers while the combustor is being assembled. In fact, each references does not describe any swirlers having a pair of substantially parallel and diametrically opposed flats.

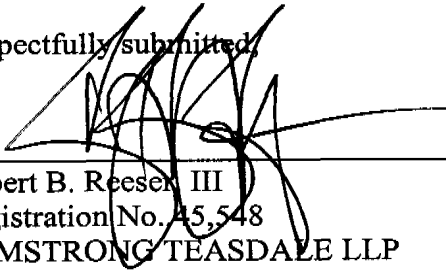
Accordingly, for at least the reasons set forth above, Claim 8 is submitted to be patentable over Halila, Koshoffer, and Thompson in view of Freidauer.

Claims 9-12 depend from independent Claim 8. When the recitations of Claims 9-12 are considered in combination with the recitations of Claim 8, Applicants submit that Claims 9-12 likewise are patentable over Halila, Koshoffer, and Thompson in view of Freidauer.

For at least the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claims 8-12 be withdrawn.

In view of the foregoing remarks, all the claims now active in this application are believed to be in condition for allowance. Reconsideration and favorable action is respectfully solicited.

Respectfully submitted,



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TRANSMITTAL

1. Transmitted herewith is:
- Amendment Transmittal (3 pages)
 - Amendment (9 pages)

STATUS

2. Applicant
- ☐ claims small entity status.
- ☒ is other than a small entity.

EXTENSION OF TERM

3. The proceedings herein are for a patent application and the provisions of 37 C.F.R. 1.136 apply.

(complete (a) or (b), as applicable)

- (a) _____ Applicant petitions for an extension of time under 37 C.F.R. 1.136
 (Fees: 37 C.F.R. 1.17(a)-(d) for the total number of months checked below:)

Extension for response within:	Other than small entity Fee	Small entity Fee (if applicable)
_____ first month	\$ 120.00	\$ 60.00
_____ second month	\$ 450.00	\$ 225.00
_____ third month	\$ 1,020.00	\$ 510.00

_____ fourth month	\$1,590.00	\$ 795.00
_____ fifth month	\$2,160.00	\$1,080.00

Fee: \$ _____

If an additional extension of time is required, please consider this a petition therefor.

(Check and complete the next item, if applicable)

_____ An extension of _____ months has already been secured. The fee paid therefor \$_____ is deducted from the total fee due for the total months of extension now requested.

Extension fee due with this request \$_____

OR

- (b) X Applicant believes that no extension of term is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition for extension of time.

FEE FOR CLAIMS

4. The fee for claims (37 C.F.R. 1.16(b)-(d)) has been calculated as shown below:

(Col. 1)		(Col. 2)	(Col. 3)	SMALL ENTITY	OR	OTHER THAN SMALL ENTITY
CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NO. PREVIOUSLY PAID FOR	PRESENT EXTRA	ADDITIONAL RATE FEE		ADDITIONAL RATE FEE
TOTAL INDEP.	MINUS		=	x \$25.00 = \$		x \$50.00 = \$
	MINUS		=	x \$100.00 = \$		x \$200.00 = \$
_____ FIRST PRESENTATION OF MULTIPLE DEP. CLAIM				+ \$180.00 = \$		+ \$360.00 = \$
				TOTAL ADDITIONAL FEE \$	OR	TOTAL ADDITIONAL FEE \$

- (a) ☒ No additional fee for Claims is required

OR

- (b) ☐ Total additional fee for claims required \$ _____

FEE PAYMENT

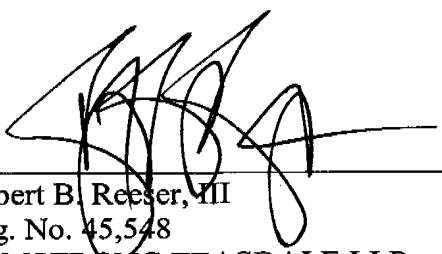
5. Attached is a check in the sum of \$_____.
- ☐ Charge Deposit Account No. 01-2384 the sum of \$_____.
A duplicate of this transmittal is attached.

FEE DEFICIENCY

6. ☒ If any additional extension and/or fee is required, charge Deposit Account No. 01-2384.

AND/OR

- ☒ If any additional fee for claims is required, charge Deposit Account No. 01-2384.
7. ☐ Other:



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